

Bee Sting Injury to Cornea: A Case Report

Anand Kumar Kularia, C.S. Vyas

SN Medical College, Jodhpur, Rajasthan, India

Summary

We report a case of bee sting injury to the cornea presenting with endothelial keratitis and hypopyon, its pathogenesis, treatment and outcome. A young male of 24 years reported in the emergency department with acute painful red eye and sudden loss of vision. It looked like a case of corneal ulcer with hypopyon, but further inquiry and slit lamp examination revealed bee sting on the cornea and its reaction. It was managed with hospital admission and topical and oral corticosteroid as mainstay of therapy. Along with, it mydriatic atropine eye drop and topical antibiotic was also given. The corneal infiltration and edema reduced gradually, hypopyon disappeared completely. After 4 weeks of follow up, the visual acuity was 6/9, and the cornea was clear and bright, leaving behind only a small peripheral corneal opacity.

Delhi J Ophthalmol 2019;29;108-110; Doi <http://dx.doi.org/10.7869/djo.461>

Keywords: Bee Sting, Keratitis, Uveitis

Introduction

Corneal bee sting is a rare eye injury, as most of the time. The globe is protected by eye lids. It is seen mostly during gardening, farm work and bike ride, without eye protection. Bee and wasp belong to Hymenoptera species of insects. Bee venom is a mixture of toxic substances such as Phospholipase A, Phospholipase B, Apamine, Hyaluronidase, Mast cell degranulating peptide and Mastoparan peptide. The venom is injected in the tissue and aqueous humour. These toxins are responsible for acute reaction in the eye. It causes corneal stromal infiltration, endothelial cell loss and sometimes even cataract, glaucoma, uveitis, optic neuritis, and permanent vision loss. The etiology of these complications is related to three factors, penetrating, immunologic, and toxic effects of the bee sting injected venom through the cornea.^{1,2}

Due to the rarity of this condition, there is no clear guideline for management of affected individuals. The current clinical approach to corneal bee sting is to remove the embedded sting from the cornea, followed by topical steroid and antibiotics and mydriatic-cycloplegic eye drops.

In this report, we present our experience in the management of a patient with a corneal bee sting. We will discuss the efficacy of our approach by comparing with cases reported earlier.

Case Report

A 24-year-old male came to the emergency department 18 hours after his right eye was stung by a bee while driving. On arrival, the patient complained of acute red eye, severe pain, diminution of vision, and watering, which he had experienced soon after the injury. The right upper and lower eyelids were swollen, and significant conjunctival injection was present (Figure 1). His visual acuity at presentation was finger counting at one meter in the affected eye. Slit-lamp biomicroscopy revealed a bee stinger embedded into the cornea temporally between 9 to 10 o'clock position. There was infiltration around the bee sting and edema of the cornea (Figure 2), there were Descemet's folds all over the cornea with hypopyon (Figure 3). The intraocular pressure and depth of the anterior chamber were within normal limits. There was severe anterior chamber reaction with

hypopyon inferiorly. The fluorescein staining was negative. The lens was clear and the iris was normal. Examination was unremarkable in the left eye.

During examination, a deeply embedded bee sting was seen in the cornea passing through the entire thickness to the anterior chamber. Our initial management was to remove the sting under the slit lamp under topical anesthesia, and put antibiotic eye drops. No suture was applied as the wound was not leaking; it was confirmed by Seidel's test (Figure 4). Subsequently, we started topical prednisolone 1% eye drop hourly and moxifloxacin 0.5% preservative free eye drop. Also, a cycloplegic mydriatic drop homatropine 2% was given twice a day. Orally, antihistaminic and analgesic was given in BD doses.

After 4 weeks of medication, the corneal infiltration reduced, anterior chamber reaction and hypopyon resolved. The patient had 6/6 vision after full recovery, there was no residual effect of bee sting injury except for a small faint corneal opacity.



Figure 1: Eighteen hours after the injury- The deeply embedded stinger and the corneal epithelial defect are apparent around the site of injury

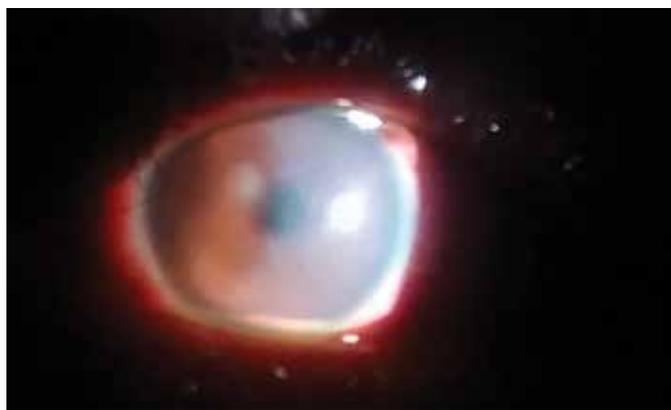


Figure 2: Corneal infiltration around the bee sting and corneal edema, hypopyon



Figure 3: Bee sting site and corneal edema with Descemet's membrane

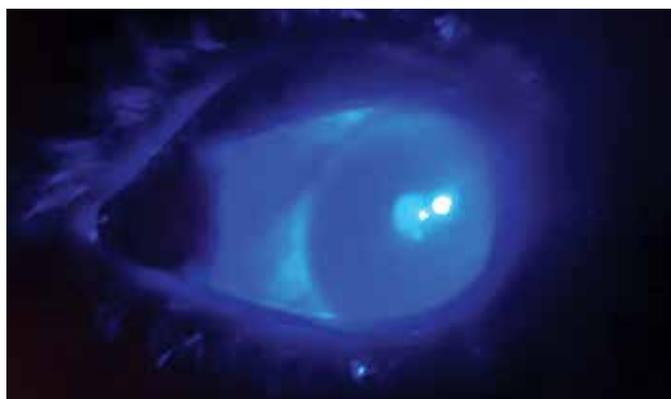


Figure 4: Negative fluorescein stain test of cornea

Discussion

The bee sting contains many toxins. It causes corneal stromal infiltration, endothelial cell loss and sometimes even cataract, glaucoma, uveitis, optic neuritis, and permanent vision loss.^{7,8} The etiology of these complications is related to three factors, penetrating injury by sting, immunologic reaction to venom and toxic effects of the bee sting injected through the cornea.

This condition can be misdiagnosed as acute viral keratitis, bacterial corneal ulcer or acute anterior uveitis until careful history is taken and the eye examined closely under slit lamp magnification for bee sting.³ The corneal staining with fluorescein dye can differentiate it from an ulcer (Figure 4).

Several studies recommend initial therapy with topical antibiotics and corticosteroids for the prevention of secondary infection and suppression of venom-induced inflammation. Analgesics and cycloplegics were added to therapy.^{6,7,9} In a number of studies, the stinger was removed manually from the cornea in the first step by extracting its visible end from the cornea. However, external removal of the stinger can be difficult and is sometimes associated with the risk of leaving broken fragments within the cornea.⁴ So these cases are preferably left to eye surgeons only. Complete removal of the sting from cornea is quintessential.

Aside from the aforementioned cases with conservative approaches, there are some instances in the literature in which retention of the sting resulted in a severe corneal inflammation. Jain et al reported the case of a boy with a retained bee stinger that resulted in a state of keratouveitis.³ The sting was removed surgically and symptoms improved. Moreover, Caça et al and Yildirim et al, in their studies, concisely addressed their surgical experience in removing deeply embedded stingers in patients who were complicated with corneal infiltration.⁴ Overall, it is generally accepted that immediate removal of the bee sting is required in patients who are complicated with corneal infiltration and edema.

The condition of the eye is judged by severity of corneal reactions in the inflammation, infiltration, edema, the distance of the stinger from the visual axis and consequent visual disturbances, depth of the protrusion and its external accessibility. Based on these factors, removal of the sting at the slit lamp or in the operating room may be indicated.^{5,6,7} The bee sting in the superficial cornea can be readily accessed and removed at the slit lamp.

Deeply embedded stingers, especially those extending to the anterior chamber, need surgery. A technique described by Sedaghat is that with a side port knife, an incision perpendicular to the corneal surface over the area of the sting was given and the sting extracted using a 26G needle. The sting was removed completely and one 10-0 polyamide suture applied. The patient was given topical antibiotics and tapering doses of corticosteroids postoperatively (Video 1).² In our case, the sting was embedded into the cornea and it was possible to remove it on slitlamp. So we put topical proparacaine 0.5% eye drops and removed it with jewelers forceps. Then, the patient was started with topical antibiotics (preservative free moxifloxacin 0.5%), corticosteroids (prednisolone 1% eye drops), and cycloplegics (homatropine 0.5% eye drops). Our approach resulted in the resolution of corneal infiltration and improvement of visual acuity back to almost normal. On follow up examinations the patient didn't show any reaction. Oral anti-histaminic and potent analgesics are also part of supplementary treatment.⁵

The majority of ophthalmic complications following corneal bee sting are suggested to be caused as a result of toxic or immunologic reactions to chemical mediators of the injected venom.² A retained intracorneal bee sting may result in long-term corneal inflammation, which may not be controlled adequately with topical steroids. It should be removed, irrespective of the duration since the injury.³

Usually, if tested, corneal and conjunctival swab culture is

reported to be negative for bacteria and fungi. However, in rare conditions, corneal bee sting is associated with infectious complications and bacterial culture growth. However, in most cases, the culture result is negative, and the observed ocular complications might be caused by an immunologic reaction to the venom toxic materials.⁹

Conclusion

We recommend surgical removal of bee sting under anesthesia in all cases. This is to be followed by topical prednisolone eye drops 1%, moxifloxacin 0.5% and mild cycloplegics like homatropine 0.5% eye drops, along with oral antihistaminic and analgesic. Preferably, patients should be admitted in the ward for close monitoring till the condition improves. If the condition deteriorates, add oral prednisolone 1 mg/kg/day. The final result of our treatment was only a small paracentral corneal opacity at bee sting site, and rest of the cornea was absolutely clear and shining. The patient had a visual acuity of 6/6 in the affected eye after 4 weeks.

References

1. Gudiseva H, Uddaraju M, Pradhan S, Das M, Mascarenhas J, Srinivasan M, Prajna N V. Ocular manifestations of isolated corneal bee sting injury, management strategies, and clinical outcomes. *Indian J Ophthalmol* 2018; 66:262-8
2. Sedaghat MR, Mazouchi M, Sagheb Hossein Poor S. Corneal Bee Sting Causing Serious Visual Complications: A Case Report. *Iranian Journal of Ophthalmology* 2012; 24 :66-70, <https://youtu.be/nLhehkqbvkw>
3. Jain V, Shome D, Natarajan S. Corneal bee sting misdiagnosed as viral keratitis. *Cornea* 2007; 26:1277-1278.
4. Çaça I, Ari S, Ulü K, Ayata A. Bee sting of the cornea: a case study and review of the literature. *Ann Ophthalmol (Skokie)* 2006; 38:77-79.
5. Sood T, Tomar M, Sharma A, Thakur B. A rare case report of corneal wasp sting. *J Clin Exp Ophthalmol* 2016; 7:589.
6. Vélez M, Salazar GI, Monsalve P. Bee sting of the cornea. *Case report Colomb Méd* 2010; 41:176-178.
7. Lin PH, Wang NK, Hwang YS, Ma DH, Yeh LK. Bee sting of the cornea and conjunctiva: management and outcomes. *Cornea* 2011; 30:392-394.
8. Choi MY, Cho SH. Optic neuritis after bee sting. *Korean J Ophthalmol* 2000; 14:49-52.
9. Lin PH, Wang NK, Hwang YS, Ma DH, Yeh LK. Bee sting of the cornea and conjunctiva: management and outcomes. *Cornea* 2011; 30:392-4.

Cite This Article as: Kularia AK, Vyas CS. Bee Sting Injury to Cornea: A Case Report.

Acknowledgments: Nil

Conflict of interest: None declared

Source of Funding: None

Date of Submission: 23 September 2018

Date of Acceptance: 18 December 2018

Address for correspondence

Anand Kumar Kularia ms
Rajdadiji Hospital, Sojati Gate,
Jodhpur - 342001, Rajasthan, India
Email id: dranandeye@gmail.com



Quick Response Code